4 Image Processing

Overview

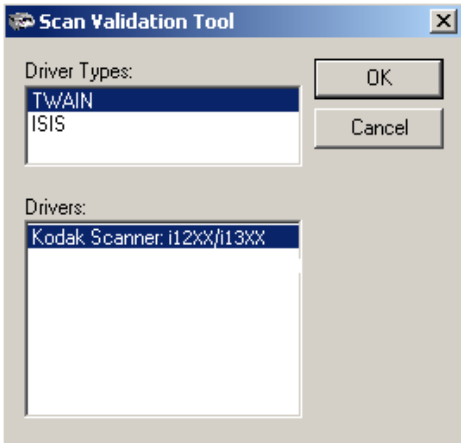
This chapter introduces concepts that may be new to many users. The *Kodak* i1200/i1300 Series Scanners provide the ability to process scanned images to improve their quality. Using these features the scanner can sometimes make the scanned image look better than the original document. Basic image processing concepts are reviewed in this chapter to help you take advantage of these features.

Image processing refers to several separate features of the scanner that allow you to automatically adjust each image in a certain way that may improve the resulting images. Common examples of image processing features are correcting any skew in the fed document, cutting the edges of the image off to remove any unneeded border or cleaning up extraneous “noise” on the image. This can be done automatically so you can get better images with a minimum amount of rework.

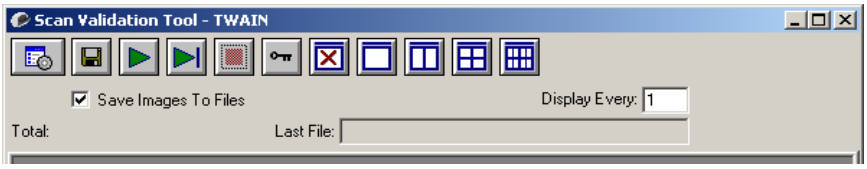
The information that follows describes these image processing features. The same options should be available on the user interface of the scanning application you are using (i.e., *Kodak* Capture Software).

Starting the Scan Validation Tool

1. Select **Start>Programs>Kodak>Document Imaging>Scan Validation Tool**.

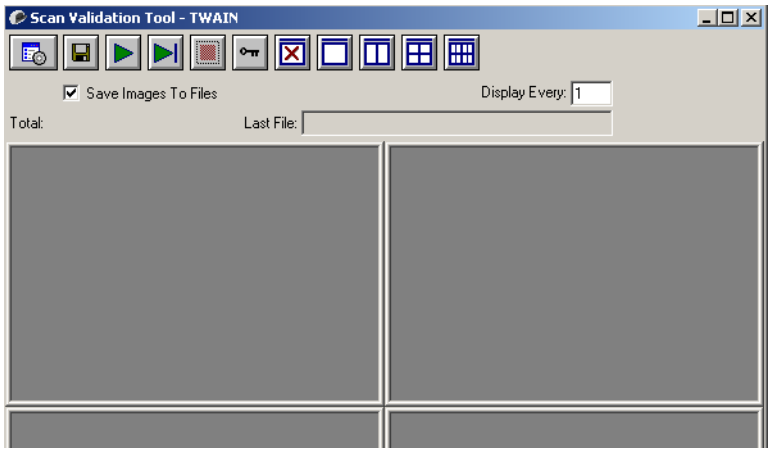


2. Select **TWAIN** (or **ISIS**) for the Driver Type and the ***Kodak* Scanner i12XX/i13XX Scanner** as the Driver. The Scan Validation Tool dialog box will be displayed.



Scan Validation Tool dialog box

The Scan Validation Tool (SVT) is a diagnostic application provided by Kodak. The SVT user interface allows access to all the features of the scanner and is a good way to verify that the scanner is working properly. The Scan Validation Tool allows you to verify scanner functionality using both the TWAIN datasource and the ISIS driver.



Toolbar buttons

Setup — displays the user interface for the selected driver.

Destination — allows you to select a directory to store scanned images and their file names. This option is only available when **Save Images to Files** is selected.

Start Scanning — scans the documents in the input tray.

Scan One Page — scans only one page.

Stop Scanning — ends the scan session.

License Key — displays the License Key window

No Image Display mode — closes the Image Viewer window (no images will be displayed).

One Image Display mode — displays one image at a time.

Two Image Display mode — displays two images at a time.

Four Image Display mode — displays four images at a time.

Eight Image Display mode — displays eight images at a time.

Save Images to Files — when selected, will save the images to the specified directory.

Display Every — enter the sampling rate of the images you want to display while scanning. For example, to see every image, enter a value of 1. To see every 10^{th} image, enter a value of 10.

Total — displays the total number of images scanned during the current Scan Validation Tool session.

- To access the TWAIN datasource (or ISIS driver), double-click the **Setup** icon on the Scan Validation Tool dialog box to access the main *Kodak* Scanner window.

Last File — displays the full path and file name for the last stored image.

Using the TWAIN datasource

The *Kodak* i1200/i1300 Series Scanners can provide a wide variety of electronic images. This can be done by using the TWAIN datasource Kodak provides in concert with your scanning application. The TWAIN datasource is the part of the capture system which links the scanner to your scanning application.

When using the TWAIN datasource, the main *Kodak* Scanner window will display a list of Setting Shortcuts. Each Setting Shortcut is a group of specific image and device settings. The supplied Setting Shortcuts represent some common electronic image outputs used for a wide variety of input documents. If none of the Setting Shortcuts meet your scanning needs, you can create a customized Setting Shortcut. For example, you could create a Setting Shortcut called “Invoices” and whenever you want to scan invoices, you simply select that Setting Shortcut.

If you are using the ISIS driver, see the section entitled, “Using the ISIS driver” later in this chapter.

For the purpose of this manual, all displayed windows assume the features available on the *Kodak* i1220 or i1320 Scanner (duplex scanner). If you have a *Kodak* i1210 or i1310 Scanner (simplex scanner) all options are limited to one-sided scanning only.

Terminology and features

If you have used previous scanners from Kodak, you may be familiar with many of the image processing features already. With the new graphical user interface in the TWAIN datasource, some of the names of those features have changed. Refer to *Appendix B, TWAIN Image Processing Terminology* for a cross reference of previous names with new names.

How do I begin?

The goal is to make scanning as simple as possible. This is accomplished by selecting a *Setting Shortcut* from the main *Kodak* Scanner window and then selecting **OK/Scan**.

The scanner comes with some Setting Shortcuts already defined. In most cases, you will find that these shortcuts are all you will need. If you find that you need different settings, then you should create your own Setting Shortcut. Your shortcut will be added to the list of Setting Shortcuts and available for all future scanning.

Most of the options you will want are available on these two windows:

- **Image** Settings: clicking the Settings button on the main *Kodak* Scanner window, displays the Image Settings window. From this window you can set your image processing parameters by using the General, Size, Adjustments and Enhancements tab. You can also access the Device settings by clicking the **Device** button or the Advanced settings by clicking the **Advanced Image Setup** icon.
- **Device** Settings: the Device button is located on the Image Settings window. When you select **Device**, you will have access to the General and Multifeed tabs. From the Device Settings window, you can also access Diagnostics.

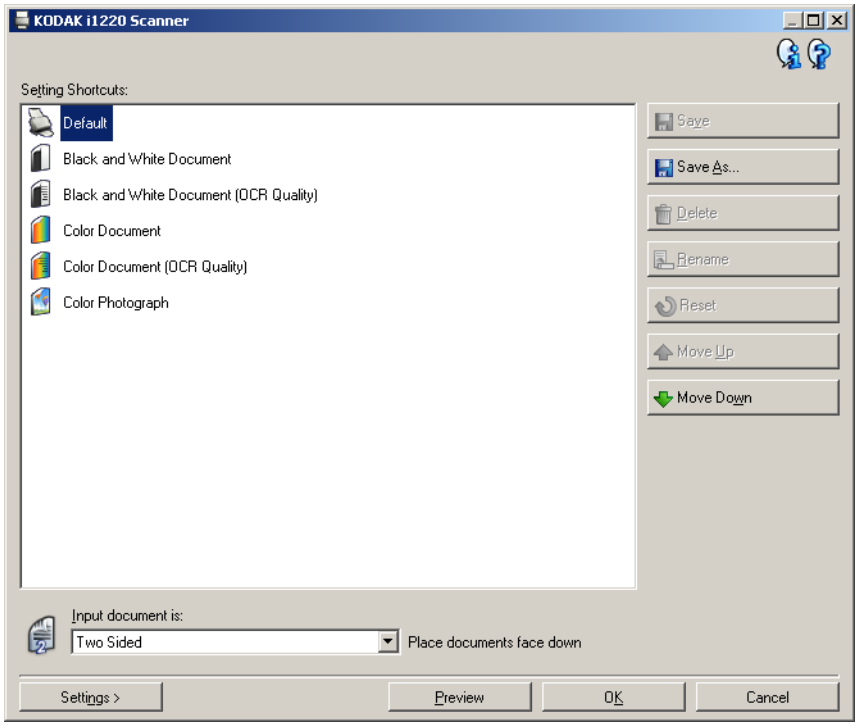
The procedures that follow describe how to configure a customized Setting Shortcut. Complete descriptions of the features and options on the main *Kodak* Scanner window and tabs are found in the section entitled, “The main *Kodak* Scanner window”.

NOTE: Setting Shortcuts can sometimes be overridden by your scanning application. If this happens, the Shortcut you call will appear in the main *Kodak* Scanner window in italics with the word <*Changed*> next to it. This is normal behavior for an application that does not use Setting Shortcuts and downloads its preferred individual settings to the scanner first and then provides access to the TWAIN datasource.

When you click **OK** to begin scanning, you will be asked if you want to save the changed settings. When using an application that does not use Setting Shortcut, select **No** to this prompt and continue scanning.

Selecting Image settings

From the main *Kodak* Scanner window:



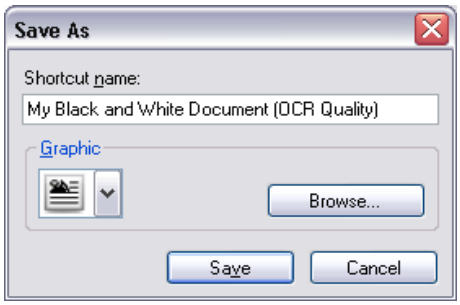
1. Select a predefined Setting Shortcut from the Setting Shortcuts list. Choose a Setting Shortcut that describes as closely as possible the image output you desire.
2. Determine if you want to capture an electronic image of the front of your document, back of your document or both sides of your document and make the selection from the *Input document is* drop-down list. Options are:
   - **Two Sided** — captures both sides of the document
   - **One Sided-Front** — captures the front side only
   - **One Sided-Back** — captures the back side only
3. Place one or two representative documents in the input tray of the scanner.

   NOTE: When scanning one side of a document or if you are using an i1210 or i1310 Scanner, be sure to place the side of the document to be scanned facing the input tray.

4. If you want to see what your selected image processing options will look like and make on-screen changes, click **Preview** to review and adjust the image.

   NOTE: This only needs to be done if you want to make interactive adjustments to your selected image processing options.

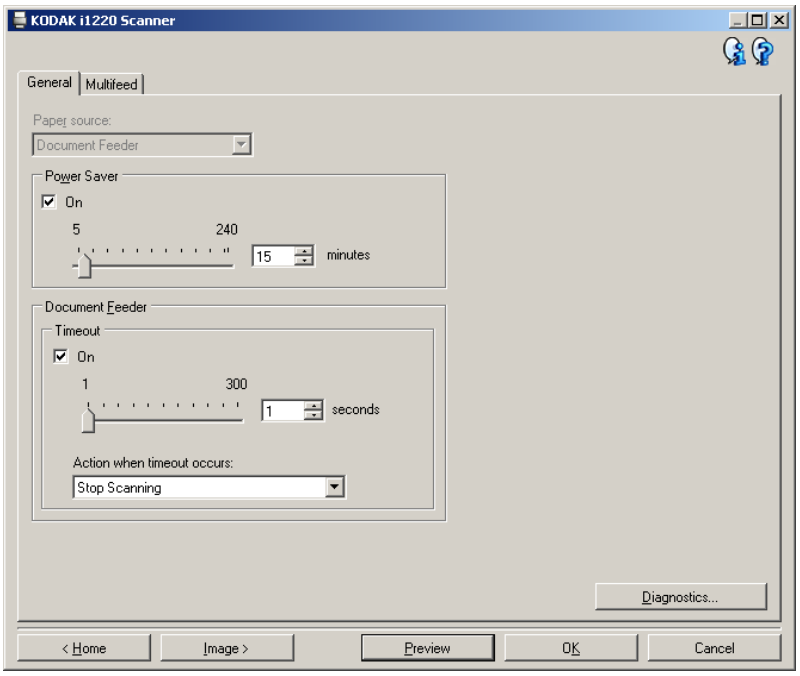
5. If you are satisfied with your selected image processing options, reload your document if necessary and click **OK/Scan**.
   - If the images are acceptable, the image processing settings are fine and you do not need to click the Settings button to alter any values in the General, Size, Adjustments or Enhancements tabs.
   - If the images are not acceptable, you can either select a different predefined Setting Shortcut that more closely describes your desired output or you can continue to work with the Setting Shortcut you have selected by reviewing each setting on the General, Size, Adjustments and Enhancements tabs and make the appropriate changes. When you make any changes, repeat Steps 3 - 5 to until you get the desired results.
6. If you made any changes to a predefined default Setting Shortcut, click **Save As** on the main *Kodak* Scanner window. The Save As dialog box will be displayed.



7. Enter a new Setting Shortcut name that is meaningful to you and click **Save**. You have now created and saved a custom Setting Shortcut which can be used for your scanning operations.

Selecting Device settings

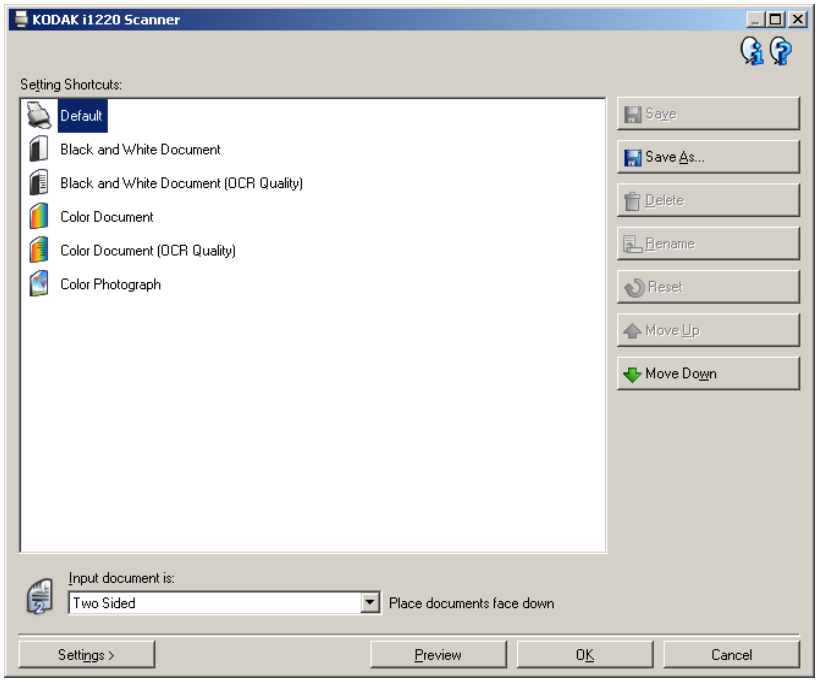
1. Select the Setting Shortcut that you just created.
2. Select **Settings** to access the Image Settings window.
3. Select **Device**. The Device Settings window will be displayed.



4. Before making any adjustments, click through the tabs on the Device Settings window to get familiar with features that are available. See the section entitled “The Device Settings window” for information about these features.
5. Determine which features you want to use when scanning and select the appropriate tab.
6. On each tab, select the appropriate options or action you want the scanner to perform.
7. When finished:
   - Click **Home** to return to the main *Kodak* Scanner window and click **Save** to save your selections to your custom Setting Shortcut, or
   - Click **Image** to return to the Image Settings window if you need to make additional changes.

The main *Kodak* Scanner window

The main *Kodak* Scanner window is the home window of the scanner's user interface. You can scan by simply selecting a Setting Shortcut and then selecting **OK/Scan**.



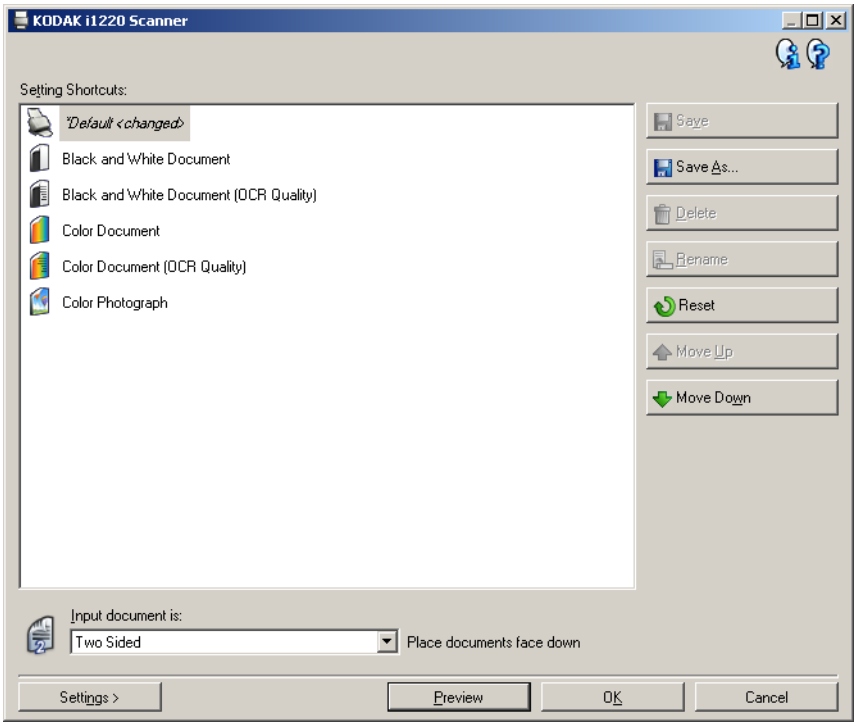
Setting Shortcuts — provides a listing of the Setting Shortcuts currently set up. The supplied shortcuts are:

- **Default** — the scanner's default settings
- **Black and White Document**
- **Black and White Document (OCR Quality)**
- **Color Document**
- **Color Document (OCR Quality)**
- **Color Photograph**

NOTES:

- Select an **OCR Quality** shortcut if you want to have the electronic images processed by an OCR application.
- These Setting Shortcuts are provided at installation and are read-only shortcuts. They can be used as models to create your custom shortcuts, but cannot be modified.

- If you have made changes to a Setting Shortcut and have not saved your changes, the Setting Shortcut will be appended with the text <*changed*>, and the name will be displayed in italics (e.g., **Default<changed>*).



Input document is — allows you to select which sides of the document has information that you want an electronic image of.

- **Two Sided:** scans the front and back of the document.
- **One Sided - Front**: scans only the front side of the document.
- **One Sided - Back**: scans only the back side of the document.

NOTES:

- Be sure to place your documents face down in the input tray.
- The **Two Sided** and **One Sided - Back** options are only available for duplex scanner models.

Save — saves any changes made to the current Setting Shortcut.

Save As — displays the Save As dialog box allowing you to save your current settings as a new Setting Shortcut.

Delete — deletes the selected Setting Shortcut; you will be prompted for confirmation. This is only available for shortcuts you have created.

Rename — allows you to rename the selected Setting Shortcut. This is only available for shortcuts you have created.

Reset — allows you to undo any changes that have been made to the selected Setting Shortcut. This is only available for shortcuts you have modified (e.g., are in italics and appended with <*changed*>).

Move Up — moves the selected Setting Shortcut up one position in the Setting Shortcut list. When you move a Setting Shortcut, it will stay in that position until you move it again.

Move Down — moves the selected Setting Shortcut down one position in the Setting Shortcut list. When you move a Setting Shortcut, it will stay in that position until you move it again.

Settings — displays the Image Settings window which allows you to make changes to the selected Setting Shortcut. From this window you can also access the Device settings and Diagnostics window.

Preview — initiates a scan and then displays the Image Settings window with the scanned image placed in the preview area. The image displayed is a sample based on your current shortcut settings.

OK/Scan — when selected, you will be prompted to save any unsaved changes.

NOTE: If this button is **OK**, any unsaved changes will remain in effect for the current scan session.

Cancel — closes the main *Kodak* Scanner window without saving any changes.

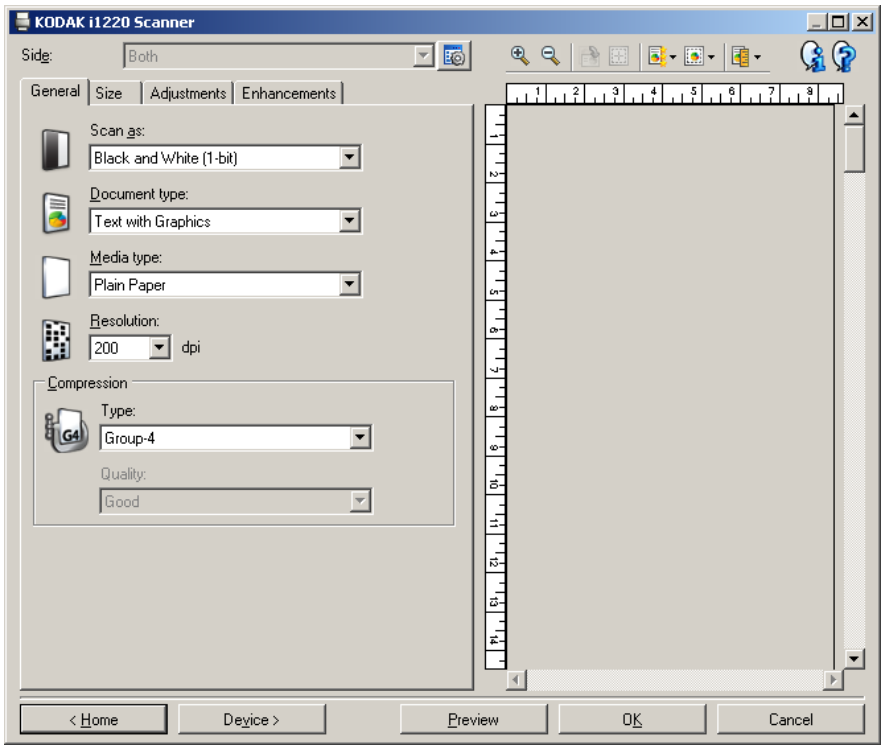
Information Icons

About: displays the scanners' version and copyright information.

Help: displays help information for the window currently being displayed.

The Image Settings window

From this window you can define image processing options by using the available tabs. The values used in Image Settings are saved in the selected Setting Shortcut. The Image Settings window includes the following tabs: General, Size, Adjustments and Enhancements.



Side — allows you to select which side and image to configure (e.g., Front, Back, Both: Color (24-bit), etc.). All image settings will be applied to the selected image.

NOTES:

- The *Side* option is only available when advanced settings have been selected on the Advanced tab.
- The *Both* and *Back* options are only available for duplex scanner models.

Advanced Image Setup: displays the Advanced tab.

Toolbar buttons

	Zoom In: enlarges the image that is currently being displayed in the preview area.
	Zoom Out: reduces the image that is currently being displayed in the preview area.
	Rotate Outline: rotates the outline 90 degrees. NOTE: This is only available if the rotated outline fits in the scanner's maximum width.
	Center Outline: adjusts the X origin of the outline such that the outline is centered within the scanner's maximum width.
	Preview Quality: selects the quality of the scanned image. • **Normal**: displays acceptable image quality at a lower resolution. • **High**: displays the most accurate representation of the actual image. The image that is displayed in the preview area is a good representation of what the final image will look like.
	Units: selects the unit of measurement for the scanner; this includes the preview area and any size-related options. The Units options are: **Inches, Centimeters** and **Pixels**.

Preview area

The main purpose of the preview area is to display a sample image that is based on your current shortcut settings. An image will be displayed in this area after a preview scan has been performed. The displayed image will automatically show the effects of your settings, in most cases, without having to rescan the document. If a rescan is necessary, you will be prompted to reinsert the document.

NOTE: If you choose **Document: Manually Select** or **Image: Part of a document** on the Size tab, the preview area will also show the current Outline selections.

Home — returns you to the main *Kodak* Scanner window.

Device — displays the Device Settings window.

Preview — initiates a scan and places the image in the preview area. The image displayed is a sample based on your current shortcut settings.

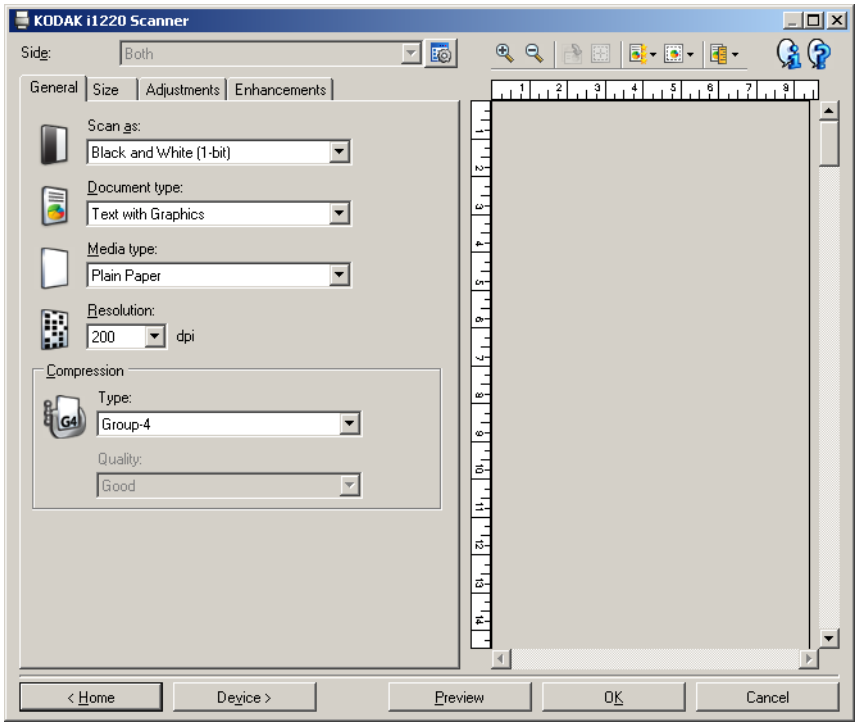
OK/Scan — when selected, you will be prompted to save any unsaved changes.

NOTE: If this button is **OK**, any unsaved changes will remain in effect for the current scan session.

Cancel — closes the main *Kodak* Scanner window without saving any changes.

General tab

The General tab contains the commonly used image options. In most cases, you will not have to change options on other tabs.



Scan as — allows you to select the electronic image format.

- **Color (24-bit)**: produces a color version of your document.
- **Grayscale (8-bit)**: produces a grayscale version of your document.
- **Black and white (1-bit)**: produces a black and white version of your document.

NOTE: The *Scan as* option is only available when **Images per Side: One** is selected on the Advanced tab.

Document type — allows you to select the type of content on your documents.

- **Text with Graphics**: the documents contain a mix of text, business graphics (bar graphs, pie charts, etc.) and line art.
- **Text**: the documents contain mostly text.
- **Photographs**: the documents contain mostly photographs.

Media type — allows you to select the type of paper you are scanning based on the texture/weight. The options are: **Plain Paper, Thin Paper, Glossy Paper, Card Stock,** and **Magazine**.

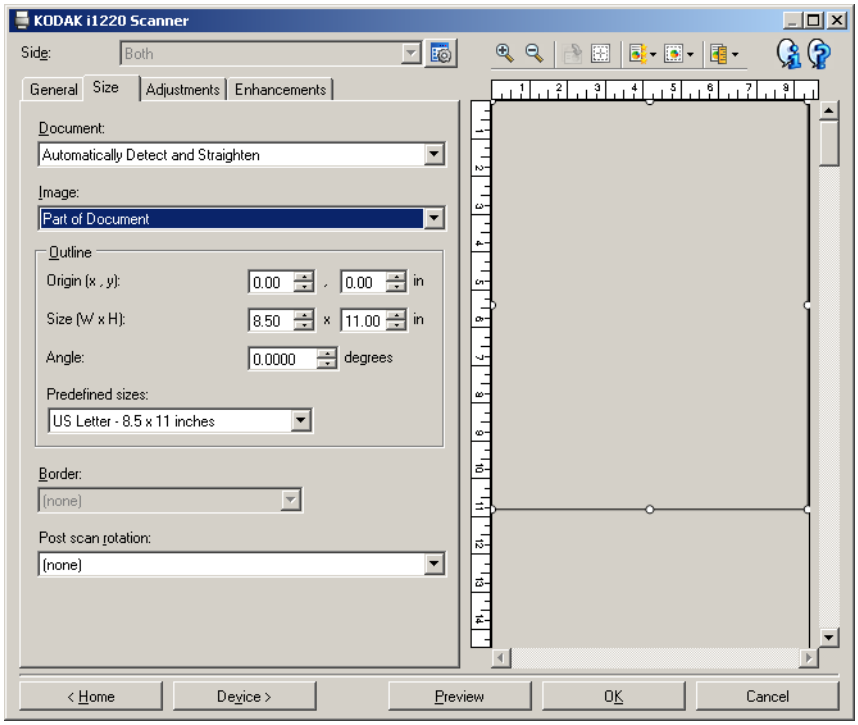
Resolution or dots per inch (dpi) — allows you to select the dots per inch (dpi), which is a determinant of a better quality image. It may also increase scanning time and image size. The resolutions are: 75, 100, 150, 200, 240, 300, 400, 600 and 1200 dpi.

Compression — allows you to reduce your electronic image size.

- **Type**: the scanner will produce a color version of your document.
  - **(none)**: no compression, which may produce a large image size.
  - **Group-4**: uses a CCITT standard to compress a black and white image, often used in conjunction with TIFF files.
  - **JPEG**: uses JPEG techniques to compress a color/grayscale image.
- **Quality** — if you choose JPEG compression, select one of the quality options:
  - **Draft**: maximum compression which produces the smallest image size.
  - **Good**: a fair amount of compression but still produces acceptable image quality.
  - **Better**: some compression which produces decent image quality.
  - **Best**: minimal compression which produces very good image quality.
  - **Superior**: the least amount of compression which produces the largest image size.

Size tab

The Size tab allows you to define values relating to the image output (i.e., cropping values, paper size, etc.).



Document — allows you to select how the scanner will detect your document as it is being fed through the scanner.

- **Automatically Detect and Straighten**: the scanner will automatically find each document (regardless of size) and will straighten any document that may have been fed crooked.
- **Automatically Detect:** the scanner will automatically find each document (regardless of size). If a document is fed crooked, it will not be straightened.
- **Manually Detect**: the scanner will return an image based on the area you specify with the Outline options. It is suggested that you only use this option for scan jobs that contain same-size documents.

Image — allows you to select which part of the document you want for your electronic image.

- **Entire document**: returns the entire document.
- **Part of the document**: returns the portion of the document which you specify with the Outline options.

Outline — allows you to select the location and size of your electronic image. The preview area will show the outline.

- **Origin (x, y)**:
  - if you select **Document: Manually Select,** (x) is the distance from the left edge of the scanner's paper path and (y) is the distance from the first portion of the document detected by the scanner.
  - if you select **Document: Automatically Detect and Straighten** and **Image: Part of Document,** (x) is the distance from the left edge of the document and (y) is the distance from the top edge of the document.
- **Size (w, h):** the width and height of the electronic image.

NOTE: The electronic image may be shorter than you specified if the outline goes beyond the end of the scanned document.

- **Angle**: allows you to select the angle of the outline.
- **Predefined sizes**: provides a list of commonly used paper sizes. Selecting an item in this list will automatically set the size of the outline to that paper's size. **Custom** will be displayed when the outline size does not match any sizes in the list.

NOTE: You can also adjust the outline displayed in the preview area using your mouse.

Border — allows you to select what action to perform on the edges of your electronic image.

- **(none)**
- **Add**: includes up to approximately 0.1 inches of border around all of the image edges.

  NOTE: This option is not available when both **Document: Automatically Detect and Straighten** and **Image: Part of Document** are selected.

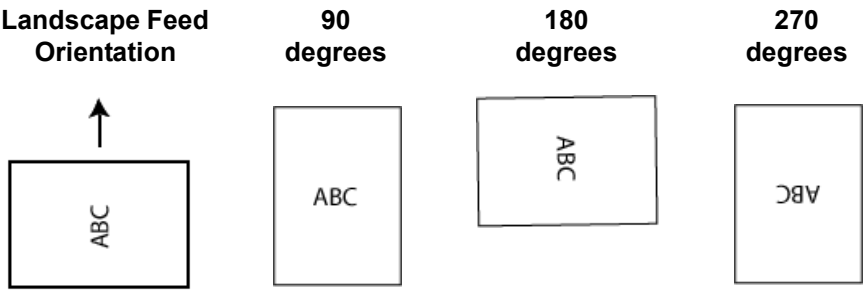
- **Remove**: produces an image that contains just the document by eliminating any residual border. Residual border can be used by variations in a document edge; for example, when a document is not a perfect rectangle and/or was fed crooked.

  NOTES:
  - While this option will not remove large amounts of residual border, there is a possibility that a small amount of the document will be lost.
  - This option is only available when both **Document: Automatically Detect** and **Straighten and Image: Entire Document** are selected.

Post-scan rotation options — allows you to select any rotation to be applied to the electronic image after it has been scanned.

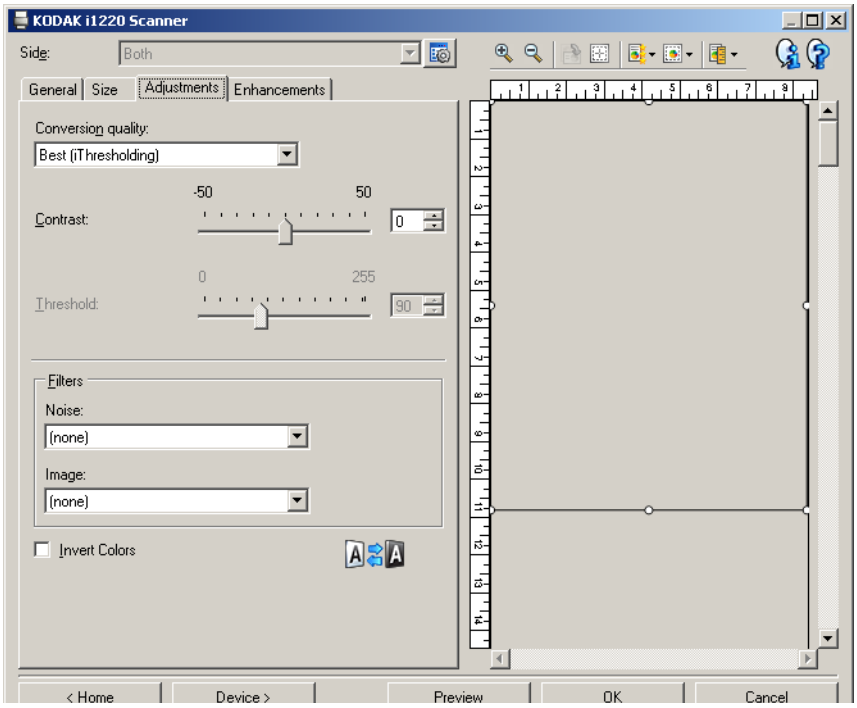
- **(none)**
- **Automatic** — the scanner will analyze each document to determine how it was fed and will rotate the image to the proper orientation.
- **90, 180, 270 degrees** — the amount of rotation that will be performed.

The following example shows how these settings effect a document that was fed landscape:



Adjustments tab: black and white

The options available on the Adjustments tab depend on the *Scan as* selection on the General tab. The following options are based on a *Scan as* selection of **Black and White**.



Conversion quality — these settings effect how the scanner analyzes a grayscale version of the document which is used to produce the black and white electronic image.

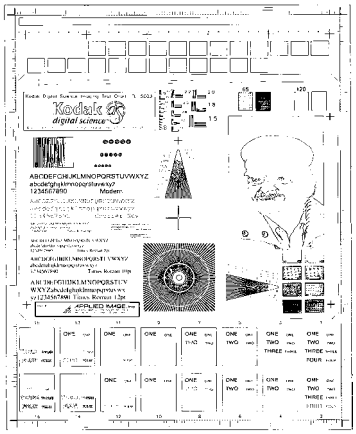
- **Best (iThresholding)**: the scanner analyzes each document to produce the highest quality image. This option allows scanning of mixed documents with varying quality (i.e., faint text, shaded backgrounds, color backgrounds) and when scanning with consistent document sets.
- **Normal (ATP)**: allows you to determine the optimal settings to produce the desired image quality. This option works best when scanning with consistent document sets. You may also want to use this option if you have difficult documents such that you cannot find a Contrast setting for *Best* that produces the desired quality.
- **Draft (Fixed)**: allows you to select the grayscale threshold used to determine if a pixel is black or white. This option works best for high contrast documents.

Contrast — allows you to make an image sharper or softer. Decreasing this setting will make the image softer and reduce noise in the image. Increasing this setting will make the image clearer and make light information more visible. The options range from **-50** to **50**. The default is 0.

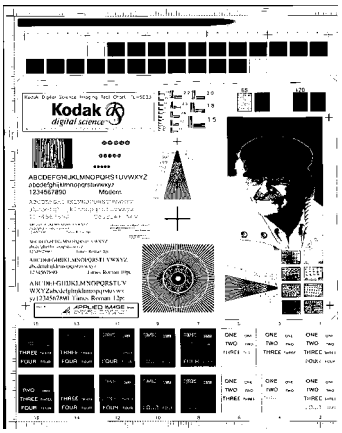
NOTE: This is not available for *Conversion quality: Draft*.

Threshold — aids in controlling the level at which a pixel is considered black or white. Decreasing this setting will make the image appear lighter, and can be used to subdue background noise. Increasing this setting will make the image appear darker, and can be used to help pick up light information. The options range from 0 to 255. The default is 90.

NOTE: This is not available for *Conversion quality: Best*.



Threshold: 50



Threshold: 127

Filters

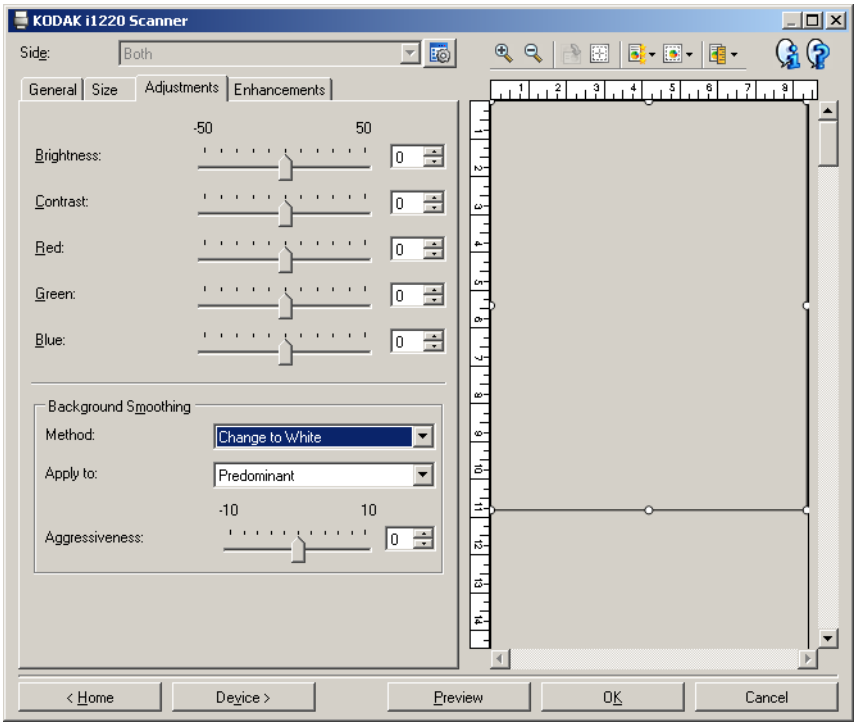
- **Noise**
  - (**none**)
  - **Lone Pixel:** reduces random noise by converting a single black pixel to white when it is completely surrounded by white pixels or by converting a single white pixel to black when it is completely surrounded by black pixels.
  - **Majority Rule**: sets each pixel based on its surrounding pixels. The pixel will become white if the majority of the surrounding pixels are white and visa versa.
- **Image**
  - (**none**)
  - **Halftone Removal**: enhances dot matrix text and images with halftone screens (e.g., newspaper photographs).

Invert Colors — allows you to select how the black pixels will be stored in the image. By default the black pixels are stored as black and the white pixels are stored as white. Turn this option on if you want the black pixels stored as white and the white pixels stored as black.

NOTE: You may want to change this option if your application misinterprets the image data and stores your image in reverse of what you expect.

Adjustments tab: color or grayscale

The options available on the Adjustments tab depend on the *Scan as* selection on the General tab. The following options are based on a *Scan As* selection of **Color** or **Grayscale**.



Brightness — changes the amount of white in the color or grayscale image. The values range from **-50** to **50**. The default is 0.

Contrast — makes the image sharper or softer. The values range from **-50** to **50**. The default is 0.

Red — changes the amount of red in the color image. The values range from **-50** to **50**. The default is 0. *Does not apply to grayscale images*.

Green — changes the amount of green in the color image.The values range from **-50** to **50**. The default is 0. *Does not apply to grayscale images.*

Blue — changes the amount of blue in the color image. The values range from **-50** to **50**. The default is 0. *Does not apply to grayscale images*.

Background Smoothing — using this option for documents or forms with a background color will help produce images with a more uniform background color. This option improves image quality and may reduce file size.

- **Method**:
  - **(none)** - no background smoothing will be performed.
  - **Automatic** - smooths up to three background colors.
  - **Change to White** - identifies up to three background colors and substitutes each color with white.

- **Apply to**:
  - **Predominant** - smooths the predominant background color to white.
  - **Neutral** - smooths only the neutral color to white, and also smooths up to two additional background colors.
  - **All** - smooths the neutral color and up to two additional background colors to white.

  NOTE: The *Apply to* options are only available for **Method: Change to White.**

- **Aggressiveness**: allows you to adjust the extent at which the background(s) are determined. The values range from **-10** to **10**. The default is 0.

Enhancements tab

The options on the Enhancements tab depend on the *Scan as* selection on the General tab.

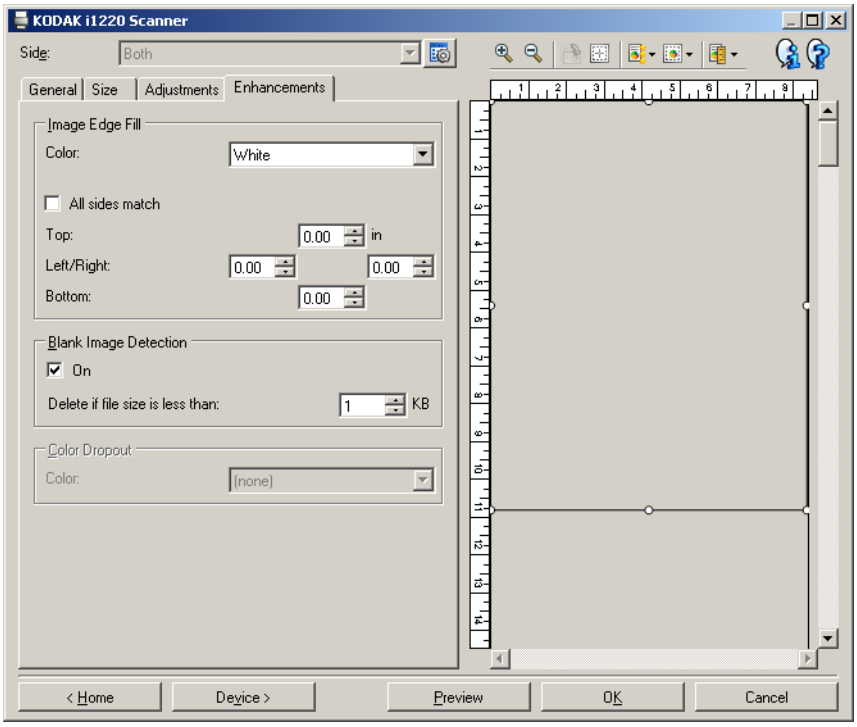


Image Edge Fill — fills the edges of the final electronic image by covering the area with the specified color.

- **Color**: allows you to select the color to fill the edges with.
  - (none)
  - White
  - Black
- **All side match**: when turned on, an equal amount will be filled in on all sides.
- **Top**: determines how much of the top edge will be filled in.

  NOTE: This option is applied to all edges when **All sides match** is turned on.

- **Left/Right:** the option on the left will determine how much of the left edge will be filled in and the option on the right will determine how much of the right edge will be filled in.
- **Bottom**: determines how much of the bottom edge will be filled in.

  NOTE: When using **Image Edge Fill,** be careful not to enter a value too large as it could fill in image data that you want to keep.

Blank Image Detection — allows you to configure the scanner to not include blank images.

- **On**: turns **Blank Image Detection** on and makes the rest of the Blank Image Detection options available.
- **Delete if file size is less than:** allows you to select the minimum image size that the scanner will consider to be non-blank. Any image that is less than this value will be considered blank and will not be given to the scanning application. The values range from 1 to 1000 KB (1 KB equals 1024 bytes).

Color Dropout — used to eliminate a form's background so that only the entered data is included in the electronic image (i.e., remove the form's lines and boxes). For black and white images, these settings effect the grayscale version of the document which the scanner analyzes to produce that electronic image.

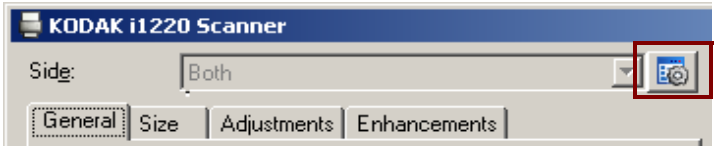
- **Color**: select the desired dropout color.
  - **(none)**
  - **Red**
  - **Green**
  - **Blue**

NOTE: The Color Dropout options are only available when the *Scan as* selection is **Black and White** or **Grayscale**.

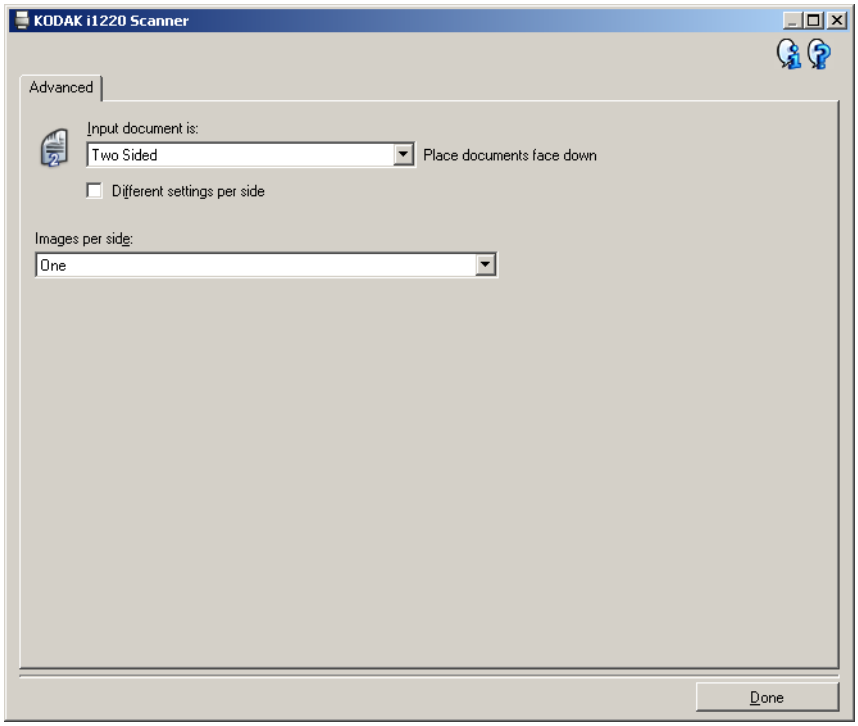
Advanced Image Setup

The Advanced tab

The Advanced Image Setup icon is located at the top of the Image Settings window next to the **Side** drop-down box.



When you select the Advanced Image Setup icon, the Advanced tab will be displayed.



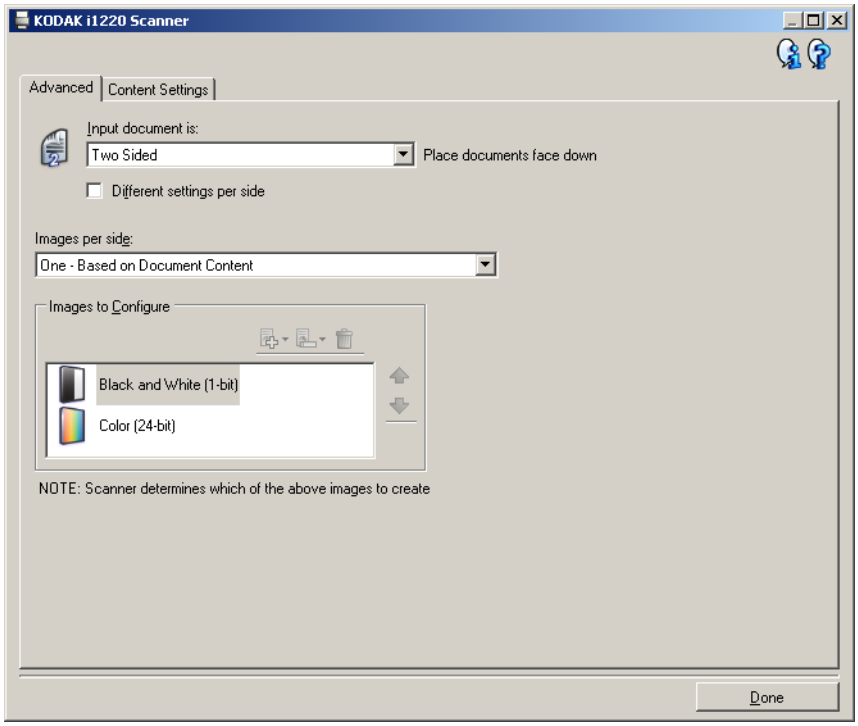
Input document is — select **Two Sided**, **One sided - Front,** or **One sided - Back** depending on what side(s) you want to configure.

NOTE: The *Two Sided* and *One Sided - Back* options are only available for duplex scanner models.

Different settings per side — by default, the settings you select apply to both sides of the image. Turn this option on if you want you to select different image processing settings for each side of the document you are scanning. For example, if you want the front side to be color and the rear side to be black and white, first make sure that you have selected the **Two Sided** option from the *Input Document is* drop-down list, then select the *Different Settings per side* checkbox.

Once you have done this, the *Side* drop-down list on the Image Settings window will no longer be grayed out and you can select different settings for each side. Now that you have enabled **Different settings per side**, your initial selections will apply only to the front side of the document you are scanning. After you have made your selections for the front side, use the *Side* drop-down list to select the back side and then make the settings you want to apply to the back.

NOTE: The *Different settings per side* option is only available for *duplex* scanner models.



Images per side — indicates how many images the scanner will create for a side, based on you imaging selections.

- **One**: indicates you want the scanner to create one image.
- **One - Based on Document Content**: indicates you want the scanner to automatically detect if the document is color/grayscale or black and white.
- **Multiple**: indicates you want the scanner to create more than one image.

NOTE: If you select **One - Based on Document Content** from the Images per side option, the Content Settings tab will be displayed.

Images to Configure — indicates which electronic images you need to configure.

NOTE: This is only available if you select anything other than **One** from the *Images per side* option. For procedures on how to configure advanced options, see the sections that follow, entitled:

- *Creating color/grayscale or black and white images based on the content of your documents, Example 1.*
- *Creating multiple images for each side of a document, Example 2.*
- *Creating different settings for each side of a document, Example 3.*

When available, use the up and down arrows to select the order the images will be delivered by the scanner to the scanning application.

Toolbar buttons:

Add: adds an image type to the bottom of the configuration list.

Change: allows you to change the currently selected image type.

Delete: removes the selected image type.

Done — returns you to the Image Settings window.

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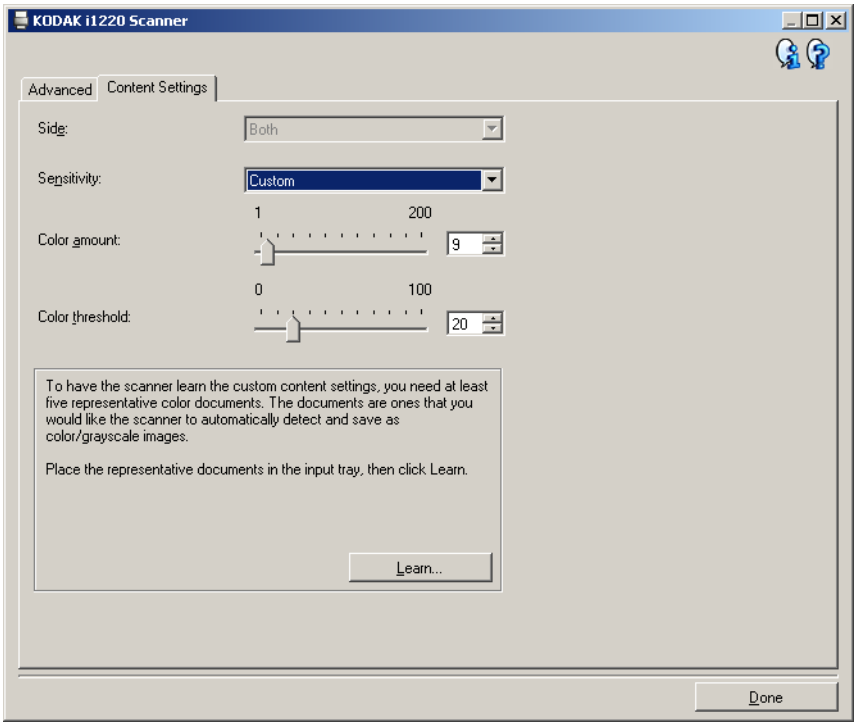
Content Settings tab

The options on the Content Settings tab can be used for either one- or two-sided jobs.



Side — determines which side the Sensitivity settings are applied to. This option is only available if **Different settings per side** is checked on the Advanced tab.

Sensitivity

- **Low**: documents requiring only a small amount of color to be saved as color/grayscale images. Used for capturing documents that are primarily black text with small logos, or contain small amounts of highlighted text or small colorful photos.
- **Medium**: documents requiring more color, as compared with the Low option, before they are saved as color/grayscale images.
- **High**: documents requiring more color, as compared with the Medium option, before they will be saved as color/grayscale images. Used for distinguishing documents containing medium- to large-size colorful photos from plain black text. Photos with neutral colors may require adjustments to the *Color Threshold* or *Color Amount* values in order to be captured correctly.

- **Custom**: allows you to manually adjust the *Color amount* and/or *Color threshold.*

NOTE: When setting Sensitivity values, it is suggested that you start with the **Medium** option and scan a typical job set. If too many documents were returned as color/grayscale vs. black and white, then change to the **High** option and re-run the job. If too few documents were returned as color/grayscale vs. black and white, then change to the **Low** option and re-run the job. If none of these options provide the desired result, select **Custom** to manually adjust Color Amount and/or Color Threshold. **Custom** also allows access to the *Learn* mode which provides a method for the scanner to analyze documents and recommend settings.

Color amount — the amount of color that needs to be present in a document before it will be saved as either color/grayscale. As the value of *Color Amount* increases, more color pixels are required. Valid values are **1** to **200**.

Color threshold — the color threshold or saturation (i.e., pale blue vs. dark blue) at which a given color will be included in the color amount calculation. A higher value indicates that a more intense color is required. Valid values are **0** to **100**.

Learn — allows you to calculate your settings based on representative color documents scanned. Before selecting **Learn**, place at least 5 representative color documents in the input tray. The documents will be scanned and analyzed to determine the recommended *Color amount*.

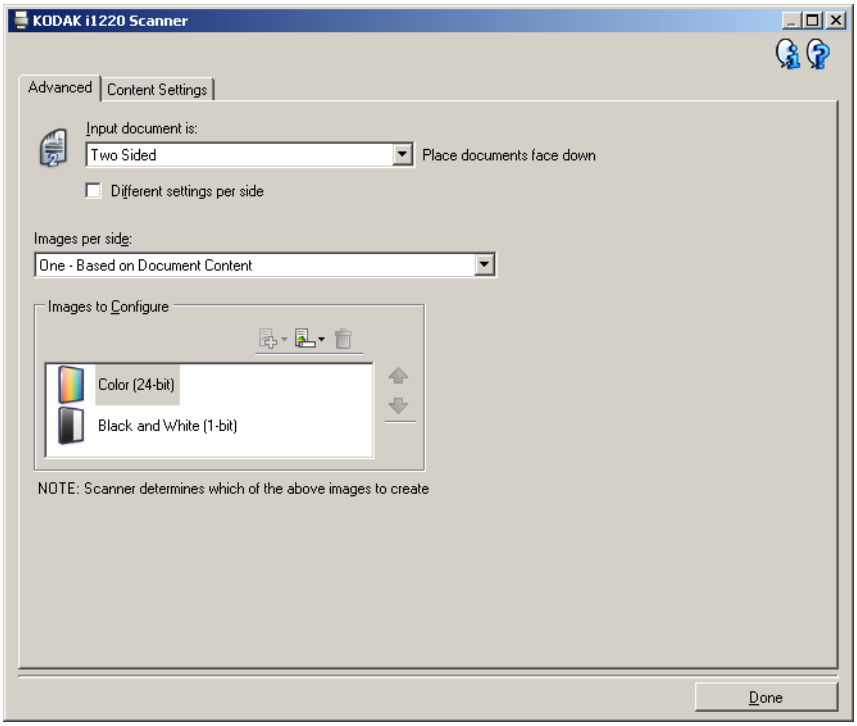
These Color amount and Color threshold sliders will be updated automatically. If these values do not provide the desired results with your job set, you may need to manually adjust the *Color Threshold*.

Creating color/ grayscale or black and white images based on the content of your documents, Example 1

In this example, let's assume you want to configure a scan session that has a mix of color and black and white documents with information on both sides. In addition, you want the scanner to detect whether the page is color or not, and then output either a color or black and white image based on that.

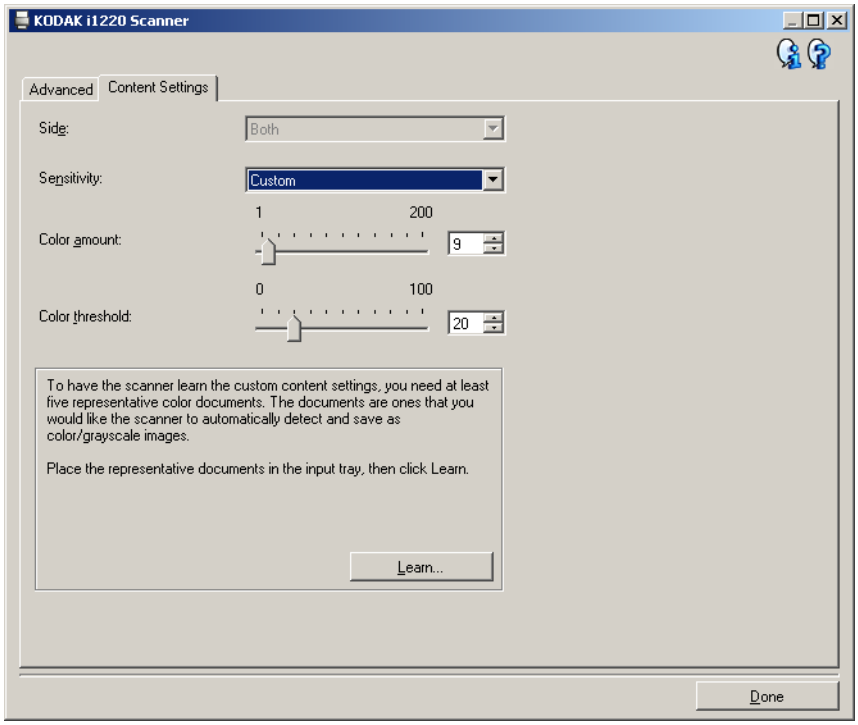
1. Select a **Setting Shortcut** from the main *Kodak* Scanner window that closely describes your desired output.
2. Select **Settings** to display the Image Settings window.
3. Select the **Advanced Image Setup** icon on the Image Settings window to display the Advanced tab.
4. Select **Input document is: Two Sided.**
5. Select **Images per side: One – based on document content.**

NOTE: The *Images to Configure* area will now be displayed on the Advanced tab and will contain a color image item and a black and white image item. The Content Settings tab will also be displayed.



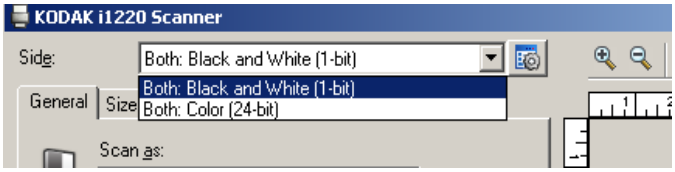
6. If you want a grayscale image instead of a color image, when enough color is detected in the document:
   - make sure *Color (24-bit)* is selected
   - select **Change** to display a list of options
   - select **Grayscale**

7. Go to the **Content Settings** tab.



8. Select a **Sensitivity** option.
9. Select **Done** to return to the Image Settings window.

   NOTE: You will notice that the *Side* option now has two entries: **Both: Color (24 bit)** and **Both: Black and White (1bit)**.



10. Select **Sides: Both: Black and White (1-bit).**

    NOTE: Make any other adjustments to the black and white image settings on the rest of the tabs on the Image Settings window.

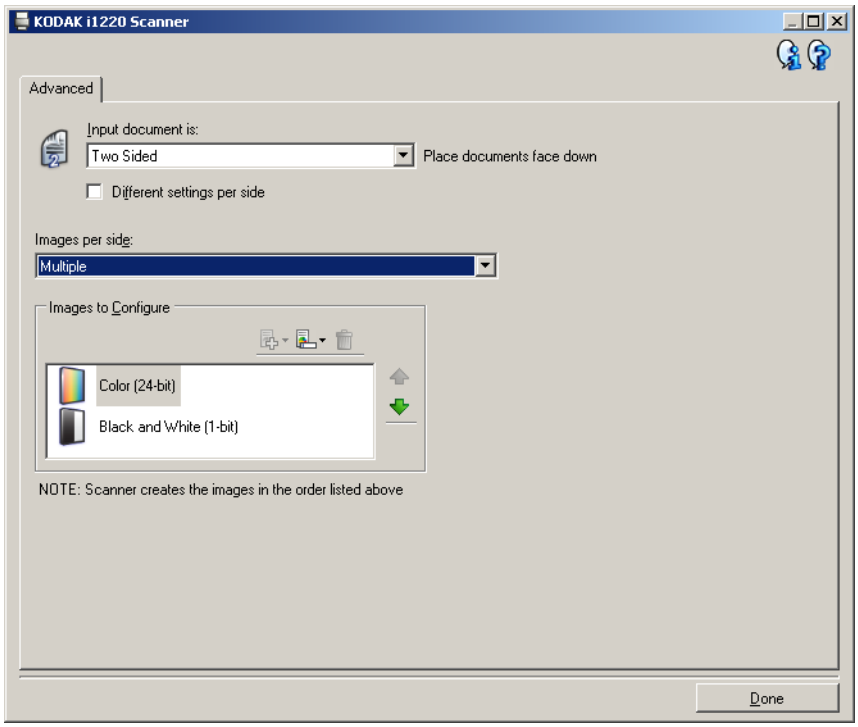
11. When finished, select **Home** to return to the main *Kodak* Scanner window and then select **Save** to save your selections to the shortcut.

Creating multiple images for each side of a document, Example 2

In this example, let's assume you want to configure a scan session that have documents with information on both sides and you want the scanner to produce both a color and a black and white image for each side of each document.

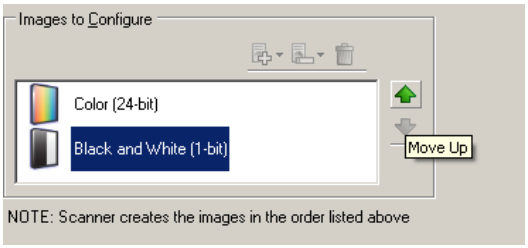
1. Select a **Setting Shortcut** from the main *Kodak* Scanner window that closely describes your desired output.
2. Select **Settings** to display the Image Settings window.
3. Select the **Advanced Image Setup** icon on the Image Settings window to display the Advanced tab.
4. Select **Input document is: Two Sided.**
5. Select **Images per side: Multiple.**

   NOTE: The *Images to Configure* area will now be displayed on the Advanced tab and will contain a color image item and a black and white image item.



6. If you want a grayscale image instead of a color image, when enough color is detected in the document:
   - make sure *Color (24-bit)* is selected
   - select **Change** to display a list of options
   - select **Grayscale**

7. By default the scanner will produce the color/grayscale image first and deliver it to the scanning application, then it will produce and deliver the black and white image. If you want the black and white image to be produced and delivered first:
   - make sure *Black and White(1-bit)* is selected
   - select **Move up** to place the black and white image first in the list.



8. Select **Done** to return to the Image Settings window.

   NOTE: You will notice that the *Side* option now has two entries: **Both: Color (24 bit)** and **Both: Black and White (1bit)**.

9. Select **Sides: Both: Color (24-bit)**.

   NOTE: Make any other adjustments to the color image settings on the rest of the tabs on the Image Settings window.

10. Select **Sides: Both: Black and White (1-bit)**.

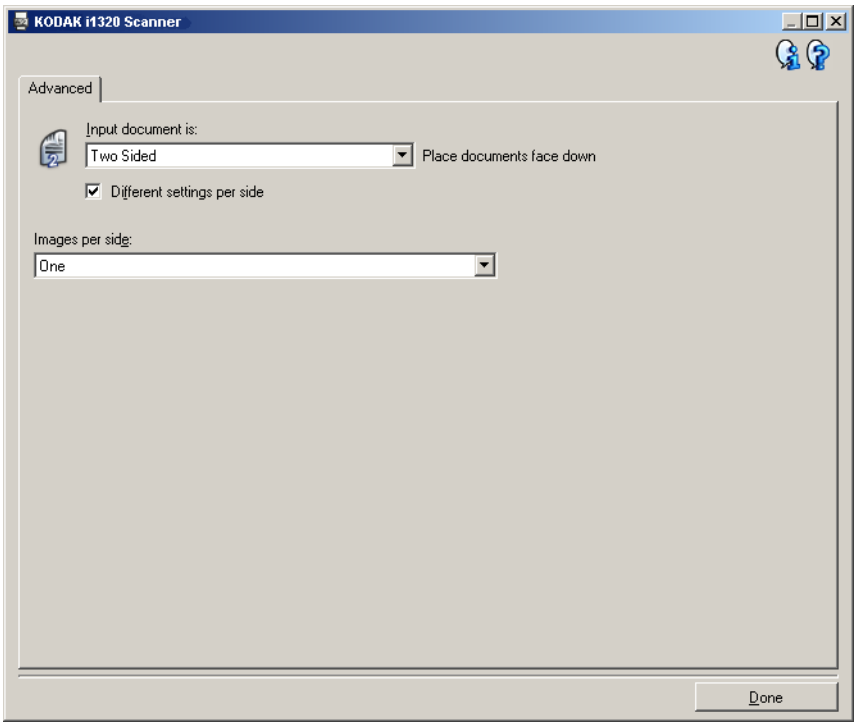
    NOTE: Make any other adjustments to the black and white image settings on the rest of the tabs on the Image Settings window.

11. When finished, select **Home** to return to the main *Kodak* Scanner window and then select **Save** to save your selections to the shortcut.

Creating different settings for each side of a document, Example 3

In this example, let's assume you want to configure a two-sided document stream of business documents that have color on the front of the document but the rear side is fine in black and white.

1. If you are not already on the Advanced tab:
   - Select a **Setting Shortcut** from the main *Kodak* Scanner window that closely describes your desired output.
   - Select **Settings** to display the Image Settings window.
   - Select the **Advanced Image Setup** icon on the Image Settings window to display the Advanced tab.
2. Select **Input document is: Two Sided**.
3. Turn on the **Different settings per side** option.
4. Select **Images per side: One.**



5. Select **Done** to return to the Image Settings window.

   NOTE: You will notice that the *Side* option now has two entries: **Front** and **Back**.

6. Select **Sides: Front**.
7. Select **Color (24-bit)** for the *Scan as* option on the General tab.

   NOTE: Make any other adjustments to the front side settings on the rest of the tabs on the Image Settings window.

8. Select **Sides: Back.**

9. Select **Black and White (1-bit)** for the *Scan as* option on the General tab.

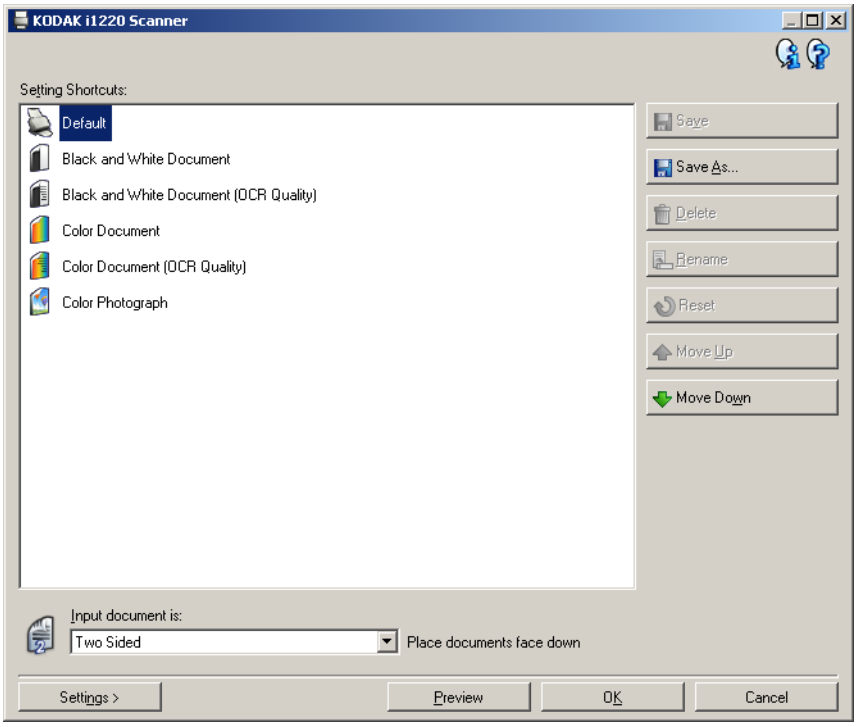
   NOTE: Make any other adjustments to the back side settings on the rest of the tabs on the Image Settings window.

10. When finished, select **Home** to return to the main *Kodak* Scanner window and then select **Save** to save your selections to the shortcut.

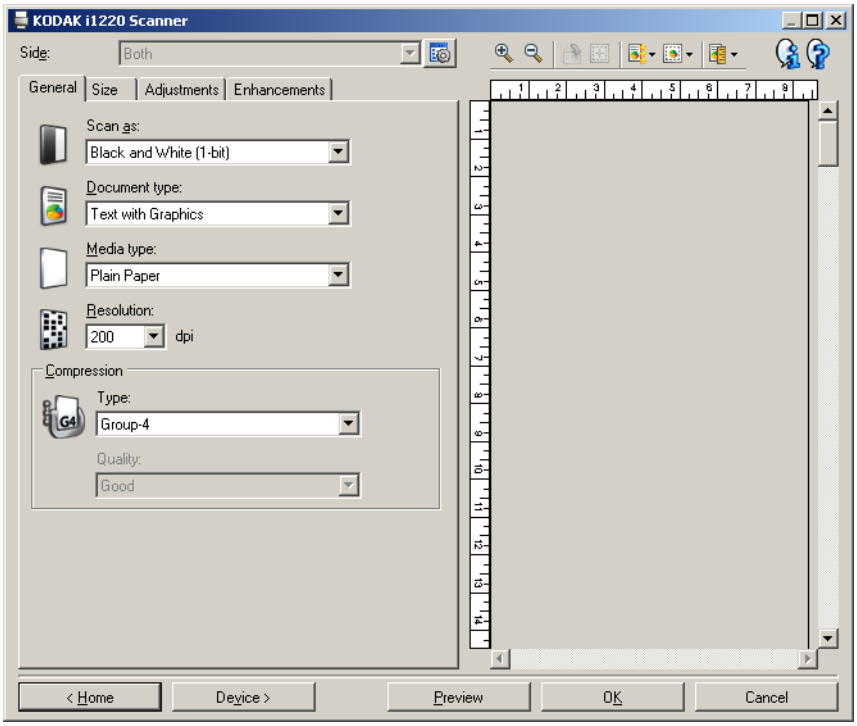
NOTE: Steps 2 and 3 are only valid for duplex scanners.

Creating a new Setting Shortcut

1. From the main *Kodak* Scanner window, select a Setting Shortcut from the list. It is recommended that you select a shortcut that most closely describes the desired image output.



2. Determine if you want to capture an electronic image of the front of your document, back of your document or both sides of your document and make the selection from the *Input document is* field.
3. Select **Settings** on the main *Kodak* Scanner window. The General tab of the Image Settings window will be displayed.



4. Select the appropriate options on the General tab.

   NOTE: If necessary, review each setting on the other tabs and make any changes.

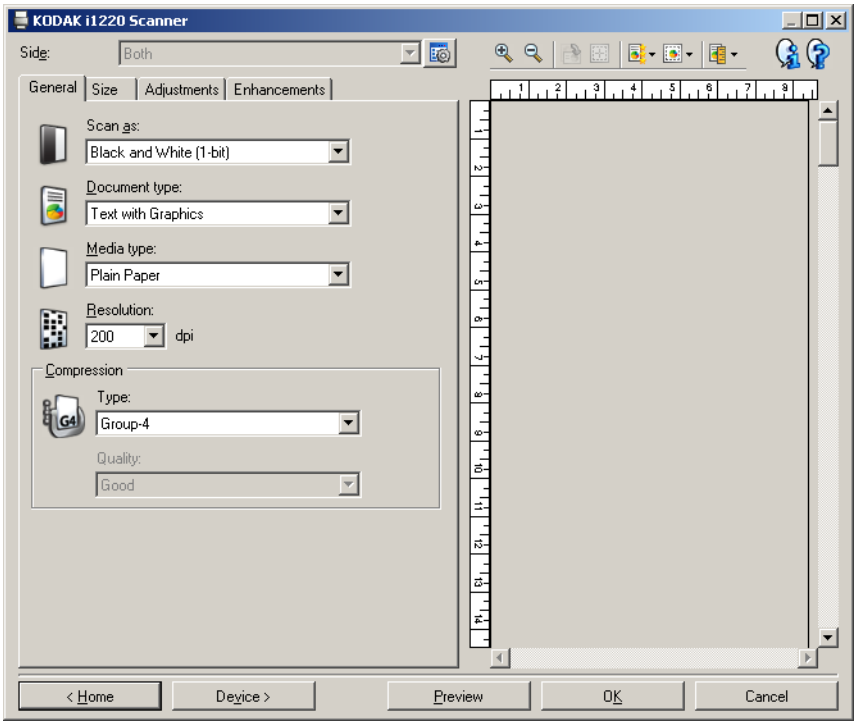
5. Place one representative document in the input tray of the scanner.
6. Select **Preview** to review the resulting image.

   NOTE: If the images are not acceptable, you can either select a different predefined Setting Shortcut or make additional changes on the rest of the tabs on the Image Settings window.

7. Define the desired Device settings by selecting **Device** on the Image Settings window to display the Device Settings window.
8. Review each tab and select the appropriate options or actions you want the scanner to perform.
9. Select **Home** to return to the main *Kodak* Scanner window.
10. Select **Save As** to display the Save As window.
11. Enter a new shortcut name that is meaningful to you and select **Save**.

Changing Image Settings

1. Select a Setting Shortcut from the main *Kodak* Scanner window that closely describes your desired output.
2. Select an *Input document is* option from the main *Kodak* Scanner window.
3. Select **Settings** to display the Image Settings window.

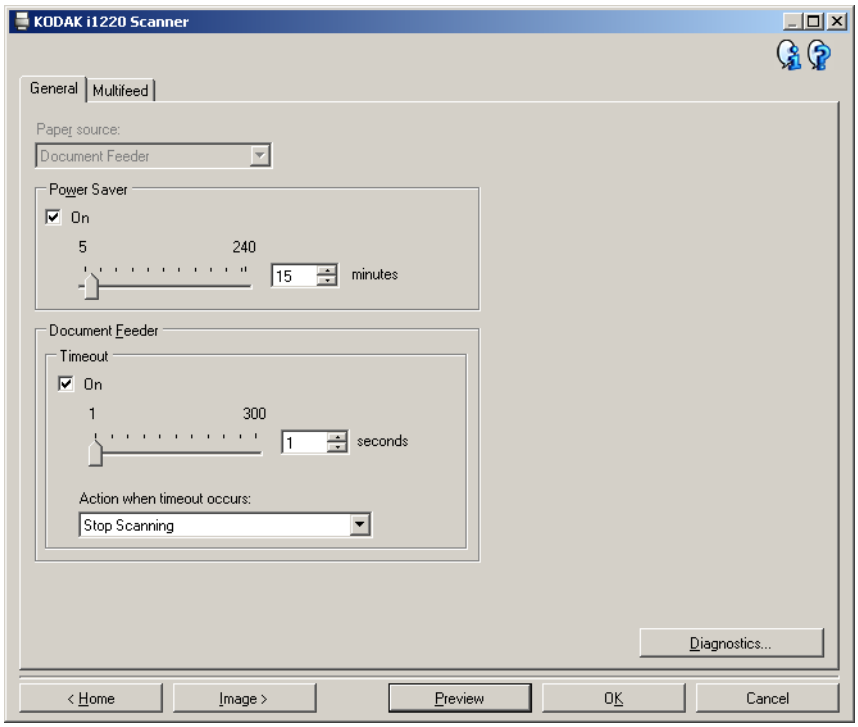


4. Before making any adjustments, browse through the tabs on the Image Settings window to get familiar with options that are available.
5. For each option you want to use, make the appropriate selections you want the scanner to perform when scanning.
6. If you want to see the result of your options:
   - Place a representative document in the input tray of the scanner.
   - Select **Preview** to perform a preview scan.

   NOTE: If the images are not acceptable, you can either select a different Setting Shortcut or continue working with the current Setting Shortcut by reviewing each tab within the Image Settings window again. Repeat this step as needed.
7. When finished, select **Home** to return to the main *Kodak* Scanner window and then select **Save** to save your selections to the shortcut.

The Device Settings window

From this window you can set all scanner-specific options, as well as diagnostics, by using the available tabs. The values used in Device Settings are saved in the selected Setting Shortcut. the Device Setting window includes the General and Multifeed tabs.



Home — returns you to the main *Kodak* Scanner window.

Image — displays the Image Settings window.

Preview — initiates a scan and then displays the Image Settings window with the scanned image placed in the preview area. The image displayed is a sample based on your current shortcut settings.

OK/Scan — when selected, you will be prompted to save any unsaved changes.

NOTE: If this button is **OK**, any unsaved changes will remain in effect for the current scan session.

Cancel — closes the main *Kodak* Scanner window without saving any changes.

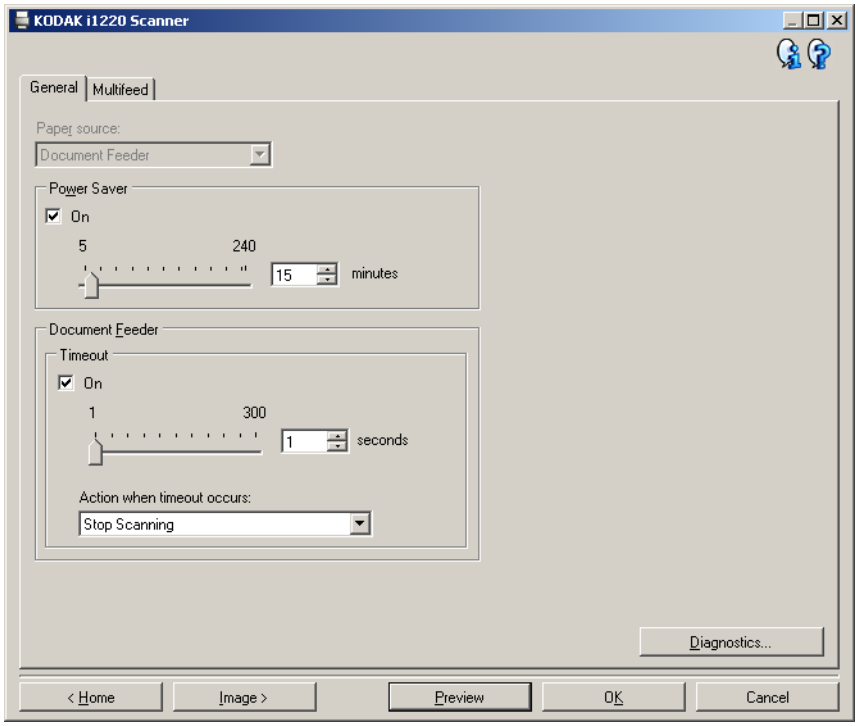
Information Icons

About: displays the scanners' version and copyright information.

Help: displays help information for the window currently being displayed.

Device - General tab

The General tab allows you to set scanner-specific transport control options.



Paper Source

- **Automatic:** looks for paper in the document feeder first. If there are no documents in the input tray, the scanner will look for a document on the flatbed.
- **Document Feeder**: when you are scanning documents from the input tray.
- **Flatbed**: scanner will scan from the flatbed.

Power Saver — allows you to set the amount of time the scanner has to be inactive before going into power saver mode. You can turn this option **off** or set a time from **5** to **240** minutes.

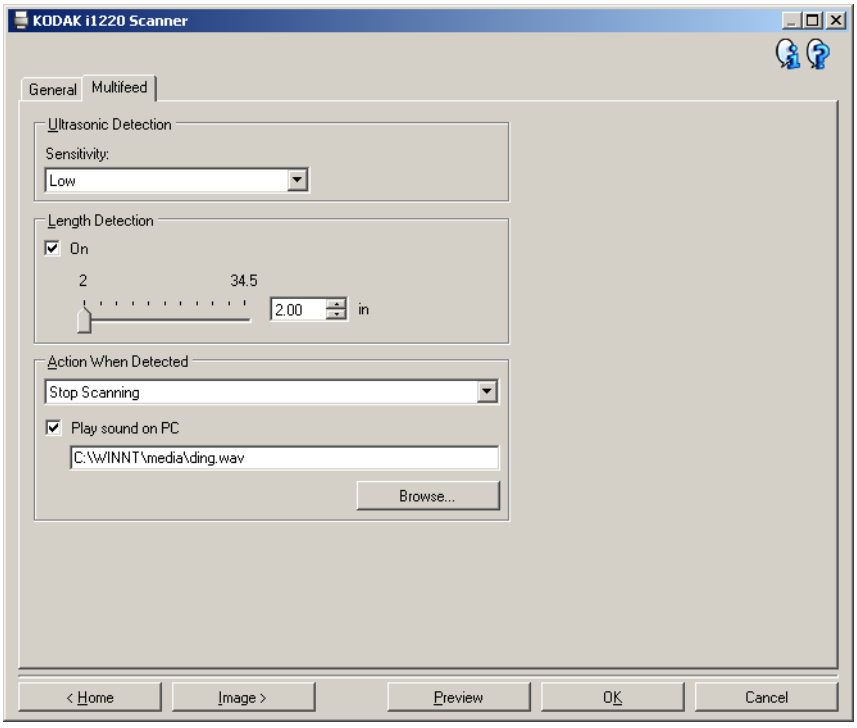
Document Feeder

- **Timeout**: allows you to select the amount of time the scanner will wait once the last document enters the feeder before the timeout occurs. You can set a time from 1 to 30Action when timeout occurs:
- **Action when timeout occurs**: allows you to specify the action that will be taken when the document feeder timeout has been reached.
  - **Stop Scanning:** scanning will stop and control will return to the scanning application (i.e. ends the job).

Diagnostics — provides access to the Diagnostics tab.

Device - Multifeed tab

Multifeed detection aids in document processing by detecting documents that may go through the feeder overlapped. Multifeeds can happen due to stapled documents, adhesives on documents, or electrostatically charged documents.



Ultrasonic Detection

Sensitivity — controls how aggressively the scanner will work to determine if more than one document is fed into the scanner. Multi-feeds are triggered by detecting air gaps between documents. This allows multifeed detection to be used with job sets containing documents with mixed thicknesses.

- **(none)**
- **Low**: least aggressive setting and is less likely to detect labels, poor quality, thick or wrinkled documents as multi-fed documents.
- **Medium**: use if your job set has varying document thicknesses or labels attached to the document. Depending on the label material, most documents with labels should not be detected as a multi-fed document.
- **High**: the most aggressive setting. This is a good setting to use if all documents are similar in thickness no greater than 20-lb. bond paper.

NOTE: Regardless of the setting, “sticky” notes may still be detected as multi-fed documents.

Length Detection — allows you to select the maximum length of the documents in your job set. If the scanner detects a document of that length or longer, it will determine that a multifeed has occurred. You can turn this option **off** or set a length up to **34.5** inches.

Action When Detected — select what action you want the scanner to take when a multifeed is detected. With all options, the condition will be logged in the scanner.

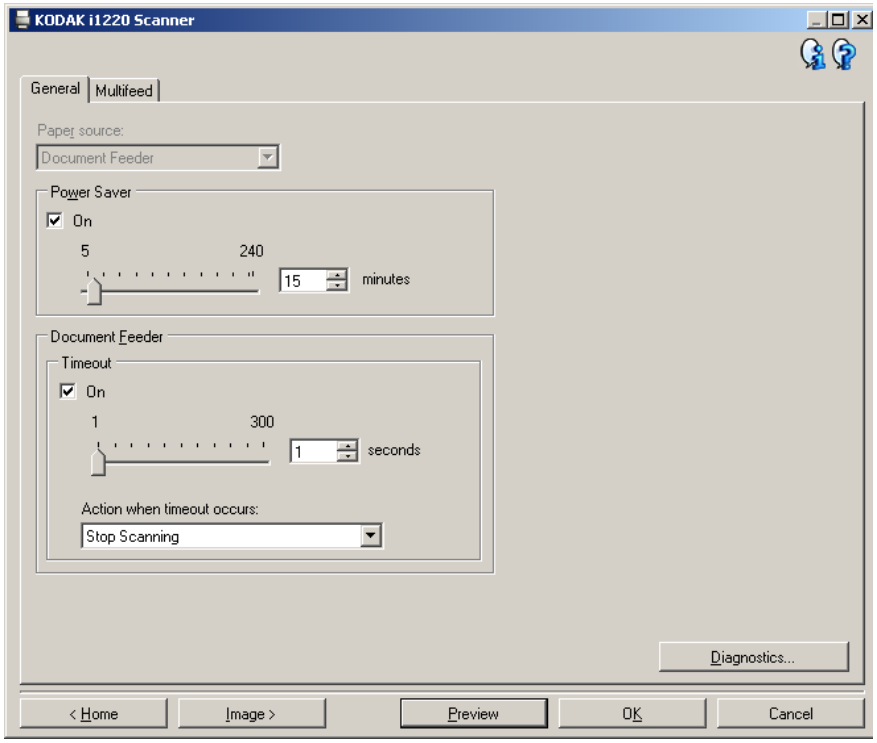
- **Stop Scanning**: scanning will stop and control will return to the scanning application (i.e., ends the job). Verify that the paper path has been cleared and restart the scan session from the scanning application.
- **Stop Scanning - leave paper in path**: scanning will stop immediately (i.e., making no attempt to clear the paper path) and control will return to the scanning application (i.e., ends the job). Clear any documents from the paper path prior to restarting the scan session from the scanning application.
- **Continue Scanning**: the scanner will continue to scan.

Play sound on PC — turn this option on if you want the PC to make a sound when a multifeed is detected. You can click the **Browse** button to select the desired .wav file.

NOTE: The sound on the PC may not occur at the exact time the multifeed is detected by the scanner.

Changing Device settings

1. Select a Setting Shortcut from the main *Kodak* Scanner window that closely describes your desired output.
2. Select **Settings** to display the Image Settings window.
3. Select **Device** to display the Device Settings window.



4. Before making any adjustments, browse through the tabs on the Device Settings window to get familiar with options that are available.
5. For each option you want to use, make the appropriate selections you want the scanner to perform when scanning.
6. When finished, select **Home** to return to the main *Kodak* Scanner window and then select **Save** to save your selections to the shortcut.

The Diagnostics window

From this window you can access the diagnostic functions of the scanner. The Diagnostics window includes the following tabs: General, Debug and Logs. The Diagnostics window can be accessed via the Diagnostics button which is located on the General tab of the Device Settings window.

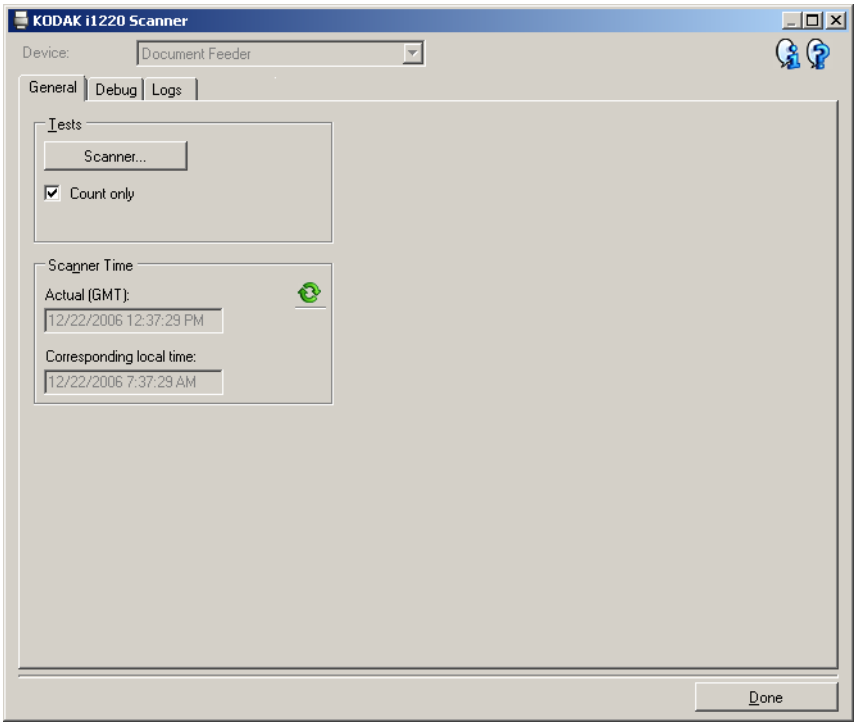
Device — allows you to select which device to perform diagnostics on. The options are: **Document Feeder** or **Flatbed**.

NOTE: This option is only available if you have the flatbed accessory attached when the scanning application connected to the scanner.

Done — returns you to the Device Settings window.

Diagnostics - General tab

The General tab allows you to perform a scanner test and displays the scanner time.



Tests

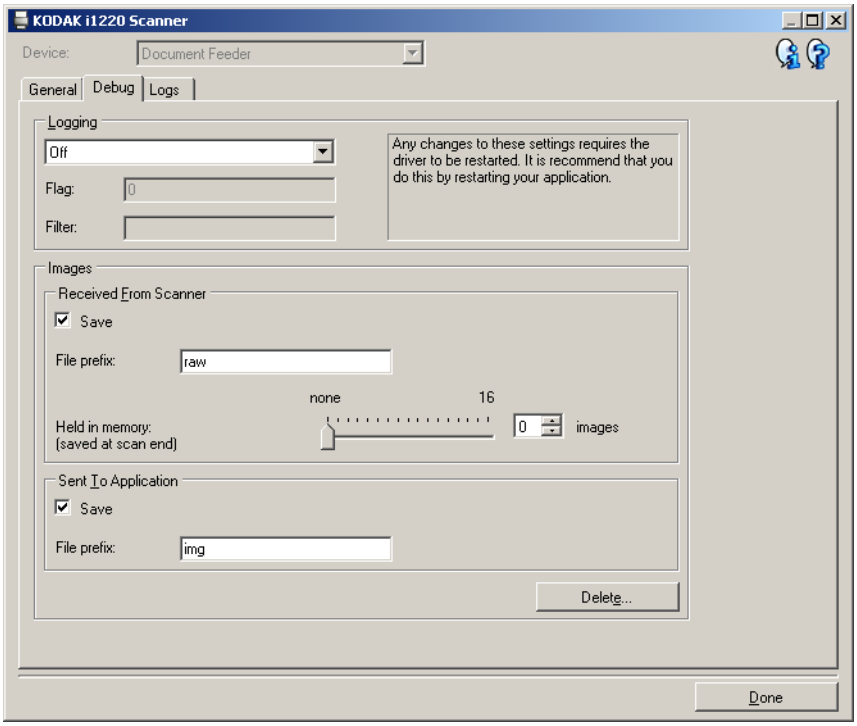
- **Scanner** — similar to, but more extensive than, a power-on self test. Clicking this button will put the device through a series of checks to determine that all the scanner hardware is working.
- **Count only** — check this box if you want to count the number of documents entering the scanner transport without actually sending the images to a scanning application.

Scanner Time

- **Actual (GMT)**: displays the Greenwich Mean Time.
- **Corresponding local time**: displays the local time.
- **Refresh icon** : redisplays the current scanner time.

Diagnostics - Debug tab

The Debug tab allows you to store the communications between the scanner and a scanning application to a file that can be reviewed later. In addition, the resulting images (both before and after image processing has been done) can be saved.



Logging — saves the communications between the scanner and a scanning application to a file for later review. Click the drop-down box to select from **Off** (the default), **On** or **Custom**. It is suggested that you do not use the Custom setting unless directed to do so by Kodak support personnel.

Flag — by default, this is 1. Leave the flag at 1 unless instructed to use another value by Kodak support personnel.

Filter — captures only those items in the scanner to the application communication stream desired and filters out anything else. Options are x, y and z.

Images - Received From Scanner — normally, it is not necessary to save the images received from the scanner before your selected image processing options are applied. Use this checkbox when instructed by Kodak support personnel.

- **Save**: click this checkbox to save raw images from the scanner (before image processing is applied).
- **File prefix:** use a relevant file prefix to more easily find and sort the saved images. **Raw** is the default.
- **Held in memory:** determines the number of images to save before the images are overwritten. Normally, only one or two are needed. Adjust as necessary.

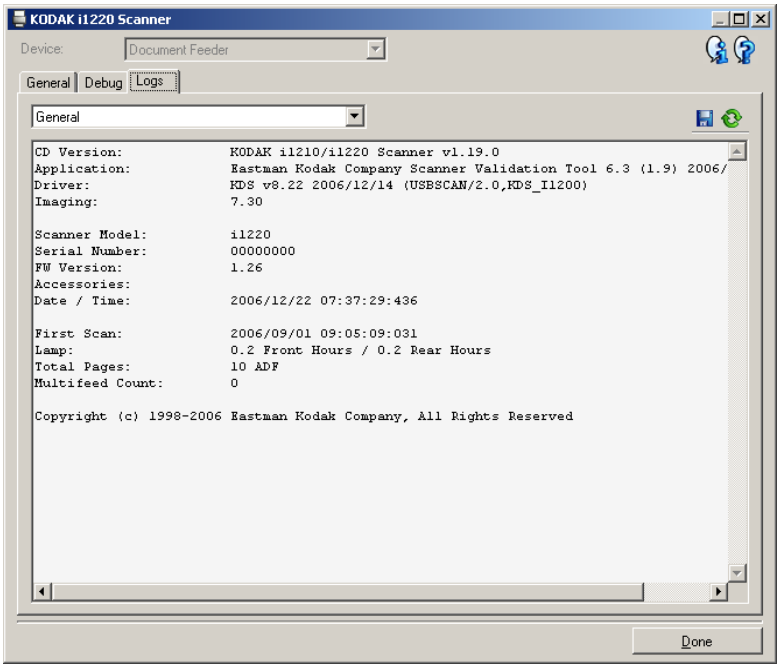
Images - Sent To Application

- **Save**: click this checkbox to save final images from the scanner (after image processing is applied).
- **File prefix**: use a relevant file prefix to more easily find and sort the saved images. Img is the default.

Delete — deletes any images that have been saved from previous jobs.

Diagnostics - Logs tab

The Logs tab allows you to view scanner hardware information, general information or the stored communications between the scanner and a scanning application. The later option requires that Logging be turned on in the Debug tab of the Device Settings window. To view a particular log, click the drop-down box in the upper left-hand corner and select a log type. By default, only the General and Operator logs are displayed.



Toolbar buttons

Save As — saves all the logs for viewing by Kodak support personnel. When selected, you will be prompted for the location to save the logs along with the option of including any debug images.

Refresh: refreshes the currently displayed log.